

## Lesson 11

# Practical implementations on small farms

### Learning outcomes

- The trainee defines the requirements for small-scale bed/pile-type vermicompost production.
- The trainee establishes the production environment by using the components in the appropriate order for bed/pile type production.
- The trainee defines the requirements for small-scale pit-type vermicompost production.
- The trainee establishes the production environment by using the components in the appropriate order for pit type production.

### Instructions for the trainer

- The trainer briefly summarizes the process steps.
- An open area should be preferred for this application. Like a practice garden.
- Large pieces are reduced into smaller pieces using garden shears.
- Egg shells are ground.
- Egg shells and coffee grounds are laid between layers of organic waste.
- The trainer tells the trainees step by step what they need to do and asks them to use the appropriate material to build the vermicompost production environment.
- At the end of the day, the instructor asks the trainees to write down all the actions taken.

**Basic requirements:** Organic waste (leaves, vegetable wastes, sawdust, grass, cattle dung, etc.), egg shells, coffee grounds, newspaper and cardboard waste, earthworms (*Eisenia fetida*), three spades, gardening shears, bucket, grinder.

# 11. Practical implementation on small farms

In this section, bed and pit methods for vermicomposting production on small-scale farms are presented step by step.

## 11.1. Bed/Pile method

Composting is done on the ground by making a bed (dimension: 180 x 60 x 60 cm) of organic mixture. This method is easy to maintain and to practice.

### Procedure

- Processing involves collection of wastes, shredding, mechanical separation of the metal, glass and ceramics and storage of organic wastes only.
- Pre-digestion of organic waste for twenty days by heaping or dumping the material along with cattle dung slurry. This process partially digests the material and fit for earthworm consumption.
- Preparation of earthworm bed. A concrete base is required to put the waste for vermicompost preparation. Loose soil will allow the worms to go into the soil and also while watering; all the dissolvable nutrients go into the soil along with water. Alternatively, it can be used directly on the ground with some kind of linen or strong plastic sheet laid over, to avoid predators and worms getting away.
- A layer of 15-20 cm of chopped dried leaves/grasses should be kept as bedding material at the bottom of the bed.
- Beds of partially decomposed material of size 180 x 60 x 60 cm should be made. Each bed should contain 1.5-2.0 q of raw material and the number of beds can be increased as per raw material availability and requirement.
- Red earthworm (15-20 worms per kg of bed material) should be released in the upper layer of the bed.
- Water should be sprinkled with can immediately after the release of worms.

- Beds should be kept moist by sprinkling of water (daily) and by covering with gunny bags/polythene.
- Bed should be turned once after 30 days for maintaining aeration and for proper decomposition.
- Compost gets ready in 75-90 days.
- The weight of the finished product is about 75% of the raw materials used [9].

## 11.2 Pit method

Composting is done in the cemented pits, wooden boxes, plastic buckets, silpaulin bag, baskets, etc. The unit is covered with thatch grass or any other locally available materials.

### Procedure

- Pit size of dimensions 300 x 120 x 60 cm of either cement or vermibag is maintained. The length and width can be increased or decreased depending upon the availability of material but not the depth because the earthworms' activity is confined to 2 feet (~½ m) depth only.
  - 1<sup>st</sup> layer: bedding material of 1" thick with soft leaves
  - 2<sup>nd</sup> layer: 9" thick organic residue layer finely chaffed material
  - 3<sup>rd</sup> layer: dried cattle dung + water equal mixture of 2" layer.

The layer is continued until the pile is filled up.

- On a 25 days old unit, 795-820 worms are introduced into the pit (15-20 worms per kg of bed material) without disturbing the pit.
- Proper moisture and temperature is maintained by frequent watering, turnings and subsequent staking.
- The turnover of the compost is 75% (If the total material accommodated in the pit is 1000 kg; the out turn will be 750 kg).
- The filled materials are watered and turned at regular interval [9].

